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cies.—Dr. E. L. Sturtevant of South Framingham, Mass., has undertaken an investigation involving the ratios between the weight of fruits and their contained seeds; the number of perfect, shriveled and abortive seeds, etc. He has printed blanks which he asks observers in different parts of the country to fill and forward to him.—Uhlworm's *Botanisches Centralblatt* for 1881, fully sustains its high character. The promptness of its notices of botanical publications and papers is a source of wonder as well as of profit to its readers.—Botanists will be glad to learn that Centuries v and vi, of Ravenel's "Fungi Americani" are now nearly ready for distribution.

ZOOLOGY.

VALUE OF THE HOUSE WREN AS AN INSECT DESTROYER.—Ornithologists and entomologists are always most properly and sensibly urging upon people the duty and necessity of protecting the birds. In fact, when any destructive insect appears in overwhelming numbers, the good offices of our feathered friends would seem to be almost our sole dependence for protection from their ravages. And yet our laws and usages are singularly defective, regarded simply from a selfish point of view—leaving humanity entirely out of the question. But the matter is constantly forcing itself upon public attention, and gradually we shall make laws which ought to have been upon our statute books from the foundation of the Government. In the meantime let us all, who have this subject at heart, keep on "preaching" until this glorious end is achieved. The observations I have been able to make during a residence of several years on a farm have convinced me that the common house wren is really one of our most valuable birds, not, perhaps, for what they have done, but from the possibilities wrapped up in their diminutive bodies. They are quite as social as the purple martin or the bluebird, and greatly surpass both of these in the rapidity with which they increase. I began several years ago to provide them with nesting-places in the vicinity of my buildings. Sometimes I fastened the skull of a horse or ox, or a small box, in a tree-top. But latterly I have made it a practice every spring to obtain thirty or forty cigar boxes for this purpose. If the box is long and large, I put a partition across the middle and make a hole through into each apartment. It is very seldom that these boxes are not occupied by one of these little families. In most instances two broods are annually reared in each nesting-place. One of my boxes last season turned out three broods of young wrens—six little hungry birds each time, or eighteen in all! I think a cigar box never before did better duty. The lamented Robert Kennicott stated that a single pair of wrens carried to their young about a thousand insects in a single day! Like all young, rapidly growing birds, they are known to be most voracious eaters, living entirely upon insects.

The point upon which most stress may be laid is this: That by providing them with nesting-places in our gardens, orchards or grounds, and not allowing them to be caught by cats or scared away by mischievous boys, we may have scores if not hundreds of them about us during most of the time in which insects are destructive. They undoubtedly return to the same localities to rear their young year after year. Last season I had up about thirty of these nesting-boxes, and all but two or three, which were not favorably located, were occupied. My crop of wrens could scarcely have been less than one hundred and fifty, and the old birds filled the air with music when they were not on duty in building their nests or feeding their young! The coming spring I intend to put up at least a hundred of these nesting-boxes in my orchards and groves, and I have no doubt I shall be repaid a hundred thousand fold for the little labor it costs. As long as they come back so regularly every year and in constantly increasing numbers, and serve me so well, I shall do all in my power to protect and encourage them. And I am of the opinion that when one species of social, useful birds can be made to congregate in such unusual numbers, others will come also. But the hardness, sociability, love of the locality where it was reared, and wonderful fecundity of the little house wren, render it, in my judgment, one of the most valuable of all our insectivorous birds.—*Charles Aldrich, Webster City, Iowa, 1881.*

OUR SOCIAL BLUE-JAYS.—None of our winter birds are so social as the blue-jays. We see them every day during our long, cold winters. Our barnyards are their favorite resorts, where they walk about very familiarly among the poultry and domestic animals, feeding upon the scattered or half-digested corn. Last night (Jan. 6), while I was passing a straw stack, a jay went whirling out of a small hole into which it had crawled a foot or more. This morning, as I write, the mercury is down to 24, so I suppose my jay had made the best possible provision to protect himself from the approaching low temperature. These birds and our little chickadees seem able to endure such extreme cold better than any others that remain with us all the year round. Soon after sunrise on any of these cold, clear mornings, they can be heard merrily chirping in the neighboring groves and thickets.—*Charles Aldrich, Webster City, Iowa, Jan. 7, 1881.*

ZOOLOGICAL NOTES.—M. Jules MacLeod has contributed a brief paper to the Royal Academy of Belgium on the rôle of insects in the pollinization of heterostyle flowers (*Primula elatior*).—Mr. S. H. Scudder continues in the Library Bulletin of Harvard University, No. 17, his bibliography of fossil insects, beginning with A. G. Butler and ending with d'Eichwald.—A structural feature hitherto unknown among Echinodermata, found in deep-sea Ophiurans, is pointed out by Mr. T. Lyman in an essay under this title in the Anniversary Memoirs of the Boston Society of Natural

History. The feature in question consists of branches of minute spines of different forms, some resembling long-stemmed agarics or parasols with small shades. The question whether these novel shapes are spines or pedicellariæ or not, is not regarded by Mr. Lyman as a very important one, "since the pedicellaria is only a spine peculiarly modified. But it may be said that their supplementary character and abnormal shape give these parasol spines the position of what used to be carefully distinguished as pedicellariæ." Mr. Lyman has also distributed a preliminary list of the known genera and species of living Ophiuridæ and Astrophytidæ, with their localities, and the depths at which they have been found; and references to the principal synonyms and authorities, Cambridge, December, 1880.—The heart of the Stomapod Crustacea is said by Claus in *Zoologischer Anzeiger* to consist of an anterior heart-like wider section, and of an elongated many-chambered dorsal vessel, the anterior part corresponding with the Decapod heart and situated in the region of the maxillæ and maxillipedes. The dorsal vessel has twelve pairs of venous openings, and sends off thirteen pairs of lateral arteries as well as a posterior aorta. A median ventral artery is present extending the whole length of the ventral nervous cord, and a sympathetic nerve extends along the dorsal side of the dorsal vessel, forming a large ganglion cell on each chamber.—In the same journal for November 29, Dr. Krancher writes on the structure of the stigmata of insects. He distinguishes five types; of simple stigmata without lips, two forms, the simplest (1) representing a hole surrounded by a chitinous ring, and (2) where the stigma consists of a row of single stigmata surrounded by a common chitinous ring, and whose tube-like continuations form the trachea. Of stigmata with lips, the lips (3) are represented by a simple sparsely haired chitinous ridge; (4) the lips are roof-like, extended inwards, and show a luxuriant growth of hairs like felting, and (5) the round stigma has on one side a median piece extending into the center. He states that there are never more than ten pairs of stigmata.—In an interesting report on the edible fishes of the Pacific coast in the Report of the Commissioners of Fisheries of the State of California for 1880, Mr. W. N. Lockington gives some novel information in regard to the hag fish of that coast (*Polistotrema dombeyi*). While at Monterey he was shown, by Prof. D. S. Jordan, several rock cod which had been literally eaten alive by them and had washed ashore as mere shells. The hag enters by the gills, or occasionally by devouring the eye, and eats its way into the flesh of its victim, consuming it until it dies of weakness, but presumably leaving, like the ichneumons that prey upon caterpillars, the vital parts untouched until the last. The hag is fitted for its work by its suctional mouth, which is terminal, soft, not provided with jaws, and forming a round opening when in use, as well as by two teeth on each

side of the gullet. The mouth is surrounded by barbels, and in preserved examples is scarcely visible. The fishermen of Monterey declare that one of these parasitic fishes will devour a fish of six or eight pounds weight in a single night. It is especially destructive to fish taken in gill-nets. When the hulk is taken out of the net, the hag scrambles out with great alacrity. It reaches a length of fourteen inches, and is not used for food at Monterey. —Prof. Verrill has described in the Proceedings of the National Museum, a large number of new mollusks, echinoderms, annelids, etc., many of which were obtained last summer in the remarkably successful dredging explorations of the U. S. Fish Commission about one hundred miles south of Newport, R. I., upon the slope of the continent where it plunges under the Gulf Stream. Among the most interesting discoveries were nearly fresh shells of *Argonauta argo*, which indicate that this shell must often be common near our coast. Quantities of a large, handsome but very fragile cup-coral (*Flabellum godei* Verr.) occurred. While many of the species of every class obtained are Arctic or belong to the cold waters found at similar or greater depths on the coasts of Europe and in the Mediterranean, a few genera, like *Avicula*, *Solarium* and *Marginella* are related to southern or West Indian forms. Though the very large collections of specimens obtained on these three trips of the *Fish-hawk* have, as yet, been only partially examined, enough has already been done to prove this region to be altogether the richest and most remarkable dredging ground ever discovered on our coast. As we have before remarked, the scientific results of the work of the U. S. Fish Commission are of the highest value; were it not for Government aid in this direction, to say nothing of the practical value of such researches, as showing where and on what kind of food our edible sea fishes live in winter, we could never, by private enterprise, have arrived at the knowledge of our marine fauna which we now possess, nor have got at many facts in distribution which bear on geological and palæontological problems. —The *Bulletin* of the Museum of Comparative Zoölogy, Vol. VIII, No. 1, contains a preliminary study of the Crustacea dredged in the Gulf of Mexico by the U. S. coast survey steamer *Blake* in 1877, '78 and '79, by M. Alphonse Milne-Edwards; Mr. Alexander Agassiz being the naturalist of the expedition. —Although one of the toughest of mollusks, it appears, on the authority of Mr. A. W. Roberts in the *Scientific American*, that the winkle (*Sycotypus canaliculatus*) may be added to our list of edible mollusks, from the fact that a colony of colored people back of Keyport, N. J., known as "Winkle Town," live largely on these shell-fish.